

**FACT SHEET FOR NPDES PERMIT NO. WA0024660**  
**MONTESANO WASTEWATER TREATMENT PLANT**

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**BACKGROUND INFORMATION**

*DESCRIPTION OF THE FACILITY*

*HISTORY*

Prior to 1992, the City of Montesano (the City) discharged primary treated effluent into the Chehalis River. The City's original sewer system consisted of gravity sewers and mains that were generally constructed before 1968. This collection system had deteriorated over the years and yielded excessive amounts of inflow and infiltration (I/I) into the pipes.

In October 1985, the Department required the City, through an Administrative Order (No. DE 85-727), to upgrade their sewage treatment facility to secondary treatment. The City's Wastewater Treatment Plant (WWTP), at that time, was one of the last primary treatment plants in the state discharging to fresh water. The City investigated various treatment alternatives and selected an aerated facultative lagoon option. In 1986, the Department required the City to also rehabilitate the sewage collection system to remove the high volumes of I/I. The City's consultant recommended the septic tank effluent pumps (STEP) system as the most cost-effective solution.

The City completed design and construction of the facilities by mid 1991. The City completed the One-Year Performance Certification period and sent the final report to the Department dated February 25, 1993. However, even before the final One-Year Certification period was completed (November 20, 1992), the results showed that the influent and effluent BOD<sub>5</sub> concentrations were higher than predicted in the design. The effluent also indicated periods of low pH due to loss of alkalinity during nitrification. The City was required to do a Corrective Action Report (CAR) to describe how the City will bring the WWTP back into compliance. The draft CAR was submitted, August 10, 1993, and was approved by the Department on April 12, 1995.

The City proceeded with the corrections recommended in the CAR by pre-chlorinating influent to the WWTP to reduce the hydrogen sulfide (H<sub>2</sub>S). This recommendation succeeded and the effluent from the WWTP has been in compliance over the last year. On March 20, 1996, the City's WWTP was identified as one of the recipients of the Departments annual commendation for exemplary compliance record for the past year.

The City developed a Facility Plan, plans and specifications, and is constructing an expansion of the facility. This expansion was necessary to accommodate additional growth in the city and to sewer areas of the city that is currently on septic systems. The facility plan and plans and specifications were submitted to the Department for review and approved in February 1998. Since this expansion increased flows to the WWTP, an outfall dilution/mixing evaluation was required that included the projected design discharges. This report was approved in October 1996. Since access to the facility was limited due to flooding, as in February 1996, the plan should also address improvements of the access road. The construction of the new facility is to be completed in June 1999.

*COLLECTION SYSTEM STATUS*

The plans and specifications for the collection system were approved by the Department on May 8, 1989. The collection system consists of approximately 86,000 lineal feet of 2-inch to 8-inch diameter pressure mains connecting the 1000 STEP tanks throughout the City to the WWTP force main. This force main includes 5000 lineal feet of 10-inch pipe with a railroad, creek and freeway crossings prior to connection to the WWTP. The Declaration of Completion of Construction was dated January 17, 1991.

Future expansion of the collection system consists of the upgrade of the 10-inch main to the WWTP, extension of a 6-inch main to the east end of the city to serve Basin #7, and a 6-inch main to the west to

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serve the Val-Vista area. The services to individual homes and businesses in these areas will continue to be by a STEP system.

*TREATMENT PROCESSES*

**The previous treatment process** consists of a STEP sewage collection system and a 0.36-million gallons per day (MGD) two-stage aerated facultative lagoon followed by a polishing pond, chlorination, and dechlorination prior to discharge to the Chehalis River. The first stage lagoon is a complete-mix aerated lagoon with two-days detention time and 50 hp/MG mixing; the second stage has seven-days detention with 10 hp/MG mixing requirements; and the polishing pond has one-day detention and is covered to reduce algae re-growth. The effluent discharges to the Chehalis River by gravity. However, an effluent pumping station is available for peak discharges when the river is high due to flooding and/or extreme high tides. The facility is equipped with a 75 kW stand-by generator for emergency during power outages and a control building with laboratory and workshop. Since the influent is high in hydrogen sulfide due to the STEP system, prechlorination of the influent wastewater is required.

**The new treatment process** consists of the STEP collection system and any future expansions and a 0.67 –MGD complete mix activated sludge treatment facility (Biolac aeration) with a three cell anoxic selector, clarifiers (two), blower building with three 40 HP blowers, 1.5 million gallon sludge holding lagoons, chlorine contact basin with dechlorination and discharge to the Chehalis River. The first two-stage basin of the previous treatment process was modified as the complete-mix stage. The floating partition and four aerators were removed and the Biolac aeration system installed. The polishing pond was modified for a sludge storage lagoon by removing the aerators and moving the floating partition to mid lagoon. A lime storage facility was installed at the plant to provide alkalinity for proper pH control and to accomplish nitrification. Effluent pumping is available during peak river and treatment plant flows. The emergency generator is being upgraded to 250 kW to provide additional power to the facility for this expansion. Prechlorination was retained to reduce the effects of high concentrations of hydrogen sulfide in the influent wastewater.

*SLUDGE HANDLING AND DISPOSAL*

Waste sludge production for the expanded plant at the design monthly flow of 0.67 MGD is 392 pounds of solids per day at a TSS concentration of 1.2 percent. Assuming the waste sludge is 80 percent volatile solids, the calculated VSS concentration is 1.0 percent. This corresponds to a liquid sludge flow rate of 3,900 gallons/day.

Piping for the waste activated sludge from the clarifiers to the sludge storage lagoon is laid out so that sludge can be introduced into each cell from either end of the lagoon. Approximately every six months, the point where sludge is introduced into the lagoon will be changed. A decanting valve station will be constructed to allow water at the top of the lagoon to overflow back to the treatment process. The volume of this pond at its maximum depth of nine feet is 2.52 million gallons. It is assumed that 60 percent of this volume will be available for storage of sludge. The remainder of the volume would be used to hold a water cap which would cover the sludge, forming an anaerobic layer at the bottom of the lagoon where the sludge would thicken and the volatile solids concentration would be reduced due to decomposition of the sludge.

The sludge level in the lagoon would be monitored monthly by operations staff to record the sludge level and the sludge concentration in the lagoon. The City is presently in the process of planting hybrid cottonwood trees near the treatment plant site with the intent of possibly using the area as a sludge disposal site. As necessitated by sludge level in the lagoon, the sludge would be dredged from the lagoon, dewatered, and land applied to the site. If this disposal method were used, the application schedule would need to be coordinated with the harvesting schedule of the trees. Hybrid cottonwoods reach maturity in

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eight years so one possible application schedule would be to apply the biosolids in the first and fifth years after planting. Land application of the sludge would conform to all sludge regulations.

Other sludge disposal alternatives that could be considered include hauling dewatered solids from the lagoon to a contracted land application site or hauling liquids from the lagoon to another WWTP for disposal.

An advantage of using Pond #2 as a sludge holding pond is that it provides enough volume that the City could potentially use it to hold septage collected from STEP tanks in the collection system. The City currently contracts with private haulers to dispose of this material. Additional studies would need to be undertaken to determine the costs and benefits of disposing of the septage in the sludge lagoon. The City shall contact the Solid Waste Program at the Department of Ecology (360-407-6393) for guidance when they decide to revise the present sludge disposal method of contract hauling to the City of Aberdeen.

Because of this present method of operation for sludge handling and disposal, the permit does not have additional monitoring requirements for sludge. The monitoring and testing requirements are part of the sludge treatment and disposal requirements for the City of Aberdeen.

*DISCHARGE OUTFALL*

Secondary treated and disinfected effluent is discharged from the facility via 1200 lineal feet of 12-inch force main/gravity sewer to an open-end outfall pipe into the Chehalis River. Secondary treated and disinfected effluent is discharged through a submerged open-end pipe into the Chehalis River at R.M. 13.41, upstream of SR 107 bridge. The outfall is located approximately 2000 feet upstream of the confluence of the Wynoochee and Chehalis Rivers.

*RESIDUAL SOLIDS*

The bulk of the wastewater solids are removed in the STEP tanks. These STEP tanks are pumped periodically and hauled to the City of Aberdeen's treatment facility on a regular basis for further processing. Aberdeen's sludge is processed in an anaerobic/aerobic digester treatment system and hauled by rail car to the LeMay land disposal site in eastern Washington.

The treatment facilities remove additional solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifiers, in addition to incidental solids (scum and other debris) as part of the routine maintenance of the equipment. Solids removed from the secondary clarifier are also hauled to Aberdeen for further treatment and disposal. Incidental solids (scum and other debris) removed from the treatment are disposed of as solid waste at the local landfill.

*PERMIT STATUS*

The previous permit for this facility was issued on January 8, 1997. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and total chlorine residual.

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<u>Parameter</u>	<u>Monthly Average</u>	<u>Weekly Average</u>
Biochemical Oxygen Demand (5 Day)	30 mg/L, 90 lbs/day	45 mg/L, 135 lbs/day
Total suspended solids	30 mg/L, 90 lbs/day	45 mg/L, 135 lbs/day
Fecal Coliform Bacteria 200/100 mL		400/100 mL
pH	shall not be outside the range of 6.0 to 9.0	

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	<u>Monthly Average</u>	<u>Any Sample</u>
Total Residual Chlorine	≤ 0.07 mg/L	≤ 0.19 mg/L

*SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

The facility received its last Class I inspection on October 17, 1996.

During the history of the previous permit, the Permittee has not remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The following table is a summary of the minor violations of the effluent limitations since issuance of the previous permit:

<b>Compliance Report</b>		<b>WQMA 2: Western Olympic (Grays harbor County) WRIA 22</b>				
FACILITY NAME	Date	Violation and Action	Unit	Avg. Mthly Reported	Avg Wkly Reported	Limit
Montesano						
WA0024660B						
Expired 6/26/95 E	Permit issued 1/8/97		Permit expires 6/30/2000			
	10/11/93	Order				
	1995 compliance star ★					
	Feb. 96	TSS	Lbs/day		338	330
	Jul. 96	BOD	Mg/l	34.5		30
	Mar. 97	BOD	lbs/day	95		90
	Jun 97	BOD	mg/L	35		30
	"	BOD	mg/L		51	45
	Aug 97	BOD	mg/L		49.3	45
	Oct 97	BOD	lbs/day		186.2	135
	11/18/97	Warning letter for 8/97 violations				
	Jul 98	OK				
	06/19/98	Warning letter for late March & April 1998 DMRs				



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*WASTEWATER CHARACTERIZATION*

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Annual Average ( <b>new</b> )	Lowest Monthly Average ( <b>new</b> )	Highest Monthly Average ( <b>new</b> )	Lowest Weekly Average ( <b>new</b> )	Highest Weekly Average ( <b>new</b> )
Flow, MGD	<b>0.983 (1.75)</b>	<b>0.597 (1.60)</b>	1.564 ( <b>2.24</b> )		
BOD5, mg/l	<b>34.5</b>	13.0	61.0 ( <b>30.0</b> )	13.0	69.0
BOD5, % removal	86%	69% ( <b>85%</b> )	93%		
BOD5, #/day	199	111	376 ( <b>560</b> )	127	506
TSS, mg/l	<b>30.6</b>	<b>11.0</b>	55.0 ( <b>30.0</b> )	12	76
TSS, % removal	89%	73% ( <b>85%</b> )	97%		
TSS, #/day	177	47	319 ( <b>560</b> )	77	452
Fecal Coliform, #/100 mL			212 ( <b>200</b> )	11	749 ( <b>400</b> )
				<b>Minimum Day (new)</b>	<b>Maximum Day (new)</b>
Chlorine Residual, mg/L	<b>0.07</b>	0.03	<b>0.12 (0.15)</b>	<b>0.03</b>	0.24 ( <b>0.23</b> )
Ammonia, as N, mg/L	<b>9.201</b>	<b>0.294</b>	<b>18.05 (20.9)</b>	<b>0.29</b>	31.95 ( <b>31.3</b> )
Temperature, °C				<b>19.5</b>	<b>21.6</b>
pH (range 6.0 to 9.0)				<b>6.95 (6.0)</b>	<b>9.40 (9.0)</b>

**PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

*DESIGN CRITERIA*

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the February 1997 Facilities Plan prepared by Parametrix, Inc. and are as follows:

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**Table 2: Design Standards for the City of Montesano WWTP.**

Parameter	Design Quantity
Monthly average flow (max. month)	0.67 MGD
Maximum daily flow	1.60 MGD
Instantaneous peak flow	2.0 MGD
BOD <sub>5</sub> influent loading	1060 lb./day
TSS influent loading	220 lb./day
Ammonia (NH <sub>3</sub> -N) (maximum month)	340 lbs/day
Design population equivalent	6410

*TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD<sub>5</sub>, and TSS are taken from Chapter 173-221 WAC are:

**Table 3: Technology-based Limits.**

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD <sub>5</sub> (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.67 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 167 lb./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 238 lbs/day.

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The permittee will be presumed to be in compliance with the percent removal requirement for BOD<sub>5</sub> and TSS in the permit if the permit effluent concentration limit is met and there is no excessive I/I. Infiltration is excessive when the highest 7-14 day average daily flow is greater than 120 gallons per capita per day (gpcpd). Inflow is excessive when the highest recorded daily flow during a storm event is greater than 275 gpcpd or when hydraulic overloading of the treatment plant occurs.

*SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

*NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE*

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

*NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH*

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

*NARRATIVE CRITERIA*

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

*ANTIDegradation*

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

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*CRITICAL CONDITIONS*

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

*MIXING ZONES*

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The chronic mixing zone requirement was determined to be more appropriate for the Chehalis River at Montesano due to the tidal effects and the possible reverse of flow or slowing down of the river velocities.

Acute mixing zone criteria was based on [WAC 173-201A-100(8)(a)] because of the confined area of the Chehalis River at the outfall location. A restriction of the ten percent of the width criteria (10 percent of the 25 percent of the width of the river) would be overly restrictive. Section (8)(a) also states that this size restriction may also be applied to estuaries having flow characteristics resembling rivers. Rivers that resemble estuaries also fit this requirement.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

*DESCRIPTION OF THE RECEIVING WATER*

The facility discharges to the Chehalis River, which is, designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

*SURFACE WATER QUALITY CRITERIA*

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

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*CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA*

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls, which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Chronic mixing zone [WAC 173-201A-100(7)(b)] shall not extend in any direction from the discharge ports for a distance greater than two hundred feet plus the depth of water over the ports as measured during mean lower low water (at 7Q10 river flow); and not occupy greater than twenty-five percent of the width of the water body as measured during mean lower low water (at 7Q10 river flow). This requirement was determined to be more appropriate for the Chehalis River at Montesano due to the tidal effects and the possible reverse of flow or slowing down of the river velocities.

Acute mixing zone criteria was based on [WAC 173-201A-100(8)(a)] because of the confined area of the Chehalis River at the outfall location. A restriction of ten percent of the width criteria or 2.5 percent of the width of the river would be overly restrictive. Section (8)(a) also states that this size limitation may also be applied to estuaries having flow characteristics resembling rivers. Rivers that resemble estuaries also fit this requirement. The acute zone shall not extend beyond ten percent of the distance towards the upstream and downstream boundaries of the authorized mixing zone, as measured independently from the discharge ports; and not occupy greater than twenty-five percent of the width of the water body.

WAC 173-201A-100(8)(a), part (8)(a)(ii), states that the acute zone not utilize greater than two and one-half percent of the flow (7Q10). For the determination of the toxicity of pollutants in the receiving water environment, the following criteria is used:

The acute limit is based on a one-hour average concentration not to be exceeded more than once every three years on the average. Therefore, in a tidally influenced river, it is important to use the two and one-half percent of flow for determination of the critical acute dilution ratio;

The chronic limit is based on a four-day concentration not to be exceeded more than once every three years on the average. Because of the daily diurnal tidal changes that take place throughout the four-day period, it is not proper to utilize the twenty-five percent of flow as a criterion in determination of critical chronic dilution ratio.

The Department limits this application for both river and estuary criteria to tidally influenced rivers on a case by case bases. The outfall dilution ratio study, completed in the fall of 1992, predicted acute and chronic dilution factors of 10 and 61, respectively. With an assumed 7Q10 Chehalis River flow at the SR 107 bridge near Montesano of 500 cubic feet per second (cfs), an Acute dilution factor of 12.1 was calculated for the percent of flow restriction (2.5 percent). The 7Q10 flow at the outfall location (upstream of the confluence of the Chehalis and Wynoochee Rivers) needs to be documented. If seasonal limits are requested, the 7Q20 river flows need to be determined with corresponding acute and chronic dilution factors.

The City is expanding their WWTP for future growth in 1999. The City submitted a Facility Plan (FP) and plans and specifications to the Department that were approved in February 1998. Construction will be completed in June 1999. Since the outfall may have to be modified, the proposed FP will include an outfall design and a completion of the outfall mixing zone study. Therefore, dilution factors and effluent and ambient monitoring for pollutants of concern will be part of this FP. The monitoring data and dilution factors shall establish proposed limitations for toxic pollutants identified.

The dilution factors of effluent to receiving water that occur within these zones has been determined at the critical condition by the use of the PLUMES model and WAC 173-201a-100(7)(ii) and (8)(ii). The

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dilution factors have been determined to be based on the dilution/mixing zone study and WAC 173-201A (see approved 1997 Facilities Plan): Acute Aquatic Life @ 10.5:1; Chronic Aquatic Life @ 147:1. Calculating the chronic mixing zone utilizing 25-percent of the 7Q10 river flow will limit the dilution factor to 121.5.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants-their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Chehalis River is the seven-day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the outfall was taken from the Mixing Zone study which considered both historical data and an intensive monitoring study conducted in August-September 1992. The ambient background data used for this permit includes the following from (insert source):

Parameter	Value used
7Q10 low flow	275 cfs
Velocity	0.023 ft/sec
Depth	20.68 feet
Width	283 feet
Slope	2.80 E-07
Temperature	20.5o C
pH (high)	7.78
Dissolved Oxygen	8.7 mg/L
Total Ammonia-N	0.04 mg/L
Fecal Coliform	116/100 mL dry weather ( >100/100 mL storm related)
Conductivity	115
Turbidity	11 NTU
Hardness	30.0 mg/L as CaCO <sub>3</sub>

BOD<sub>5</sub>-This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature and pH-The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 127, upstream temperature 19.4°C, upstream pH 7.7, upstream alkalinity 30.0 (as mg CaCO<sub>3</sub>/L), effluent temperature 19.1°C, effluent pH of 6, effluent pH of 9, and effluent alkalinity 50 (as mg CaCO<sub>3</sub>/L).

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Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH were placed in the permit and temperature was not limited.

Fecal coliform-The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 127.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants-Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The toxics, chlorine and ammonia, were determined to be present in the discharge. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for chlorine and ammonia to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs from May through October. The parameters used in the critical condition modeling are as follows: acute dilution factor 10.5, chronic dilution factor 121.5, receiving water temperature 19.4°C, receiving water alkalinity 30.0 (as mg CaCO<sub>3</sub>/L), and ammonia 0.04 mg/L.

Since the effluent data (DMRs) will no longer apply to the new facility, the reasonable potential also does not apply. It is assumed that the new facility will discharge effluent with equivalent concentrations of chlorine residual and ammonia. Therefore, the permit will not contain the water quality based effluent limitations (see Appendix C) for chlorine residual and ammonia. However, the permit will contain a testing schedule for chlorine and ammonia. Ecology will monitor the monthly DMRs to ascertain compliance with the calculated limits. Ecology will then calculate the reasonable potential using the data to determine if effluent limits should be included in the permit.

*WHOLE EFFLUENT TOXICITY*

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

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*HUMAN HEALTH*

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health.

**MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for activated sludge treatment facilities with discharges less than 1.0 million gallons per day.

*LAB ACCREDITATION*

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for:

**OTHER PERMIT CONDITIONS**

*REPORTING AND RECORDKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

*PREVENTION OF FACILITY OVERLOADING*

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

*OPERATION AND MAINTENANCE (O&M)*

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

*RESIDUAL SOLIDS HANDLING*

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.



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The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Grays Harbor County Health Department.

*PRETREATMENT*

*FEDERAL AND STATE PRETREATMENT PROGRAM REQUIREMENTS*

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department has been delegated authority to administer the Pretreatment Program [i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]. Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program that the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge [WAC 173-216-110(5)]. (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty (60) days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

*WASTEWATER PERMIT REQUIRED*

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

*REQUIREMENTS FOR ROUTINE IDENTIFICATION AND REPORTING OF INDUSTRIAL USERS*

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the

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Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet-unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a state waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a state waste discharge permit application.

*ANNUAL SUBMITTAL OF LIST OF INDUSTRIAL USERS*

This provision requires the POTW to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is intended to update the Department on an annual basis of the status of industrial users in the POTW's service area, without requiring the POTW to go through the process of performing a formal Industrial User Survey. This provision is normally applied to POTWs not serving industrial or commercial users. Although this permit does not require performance of an Industrial User Survey, the Permittee is nevertheless required under the previous section, to take adequate continuous routine measures to identify existing and new industrial discharges.

*DUTY TO ENFORCE DISCHARGE PROHIBITIONS*

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants that cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum-based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

*SUPPORT BY THE DEPARTMENT FOR DEVELOPING PARTIAL PRETREATMENT PROGRAM*

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

*OUTFALL EVALUATION*

Proposed permit condition S8, requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

*GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

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Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

**PERMIT ISSUANCE PROCEDURES**

*PERMIT MODIFICATIONS*

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

*RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

**REFERENCES FOR TEXT AND APPENDICES**

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

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1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

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**APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to reissue (or issue) a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on date and date in name of publication to inform the public that an application had been submitted and to invite comment on the reissuance (or issuance) of this permit.

The Department will publish a Public Notice of Draft (PNOD) on date, in name of publication to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Southwest Regional Office  
Water Quality Program  
Olympia, WA 98504

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above.

This permit and fact sheet was written by Jerry Anderson.

## APPENDIX B--GLOSSARY

**Acute Toxicity**--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment."

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

**Average Weekly Discharge Limitation** -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Combined Sewer Overflow (CSO)**--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

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**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

**Engineering Report**--A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

**Industrial User**-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Infiltration and Inflow (I/I)**--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

**Interference** -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

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Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**Pass through** -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Potential Significant Industrial User**--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.



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**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Significant Industrial User (SIU)**--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority\* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority\* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

\*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

FACT SHEET FOR NPDES PERMIT NO. WA0024660  
 MONTESANO WASTEWATER TREATMENT PLANT

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at <http://www.wa.gov/ecology>.

**CALCULATION OF AMMONIA CONCENTRATION**

INPUT

1. Ambient Temperature (deg C; 0<T<30) .....	19.4
2. Ambient pH (6.5<pH<9.0) .....	7.70
3. Acute TCAP (Salmonids present- 20; absent- 25) .....	25
4. Chronic TCAP (Salmonids present- 15; absent- 20).....	20

OUTPUT

1. Intermediate Calculations:	
Acute FT.....	1.04
Chronic FT.....	1.04
FPH.....	1.20
RATIO .....	14
PKa.....	9.42
Fraction Of Total Ammonia Present As Un-ionized .....	1.8696%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L).....	207.7
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L).....	47.3
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH3+ NH4/L) .....	11.1
Chronic Total Ammonia Criterion (mg NH3+ NH4/L) .....	2.5
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N .....	9.132
Chronic Ammonia Criterion as N .....	2.081

Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992. (will not match WAC 173-201A chronic values)

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MONTESANO WASTEWATER TREATMENT PLANT

**WATER QUALITY BASED PERMIT LIMIT CALCULATIONS**

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

**Permit Limit Calculation Summary**

	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentra tion	Water Quality Standard Acute ug/L	Water Quality Standard Chronic ug/L	Average Monthly Limit (AML) ug/L	Maximum Daily Limit (MDL) ug/L	
PARAMETER			Acute	Chronic	ug/L	ug/L	ug/L	ug/L	ug/L	
ammonia (as N)	10.5	121.5			0.04	9.132	2.081	47.59	95.51	
chlorine	10.5	121.5				19.00	11.00	99.42	199.50	
copper	10.5	121.5	0.996	0.996		3.735	2.869	19.62	39.38	
lead	10.5	121.5	0.466	0.466		10.792	0.421	89.86	180.33	
mercury	10.5	121.5	0.850			2.10	0.01	1.19	2.40	
nickel	10.5	121.5	0.998	0.997		362.70	40.28	1901.6	3815.98	
silver	10.5	121.5	0.850			0.217	*****	1.34	2.68	
zinc	10.5	121.5	0.996			29.27	26.73	153.75	308.53	

This spreadsheet calculates water quality based permit limits based on the two value steady state model using the State Water Quality standards contained in WAC 173-201A. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 99. Last revision date 1-19-95. Written by G. Shervey

Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations							Statistical variables for permit limit calculation			
WLA Acute ug/L	WLA Chronic ug/L	LTA Acute ug/L	LTA Chronic ug/L	LTA Coeff. Var. (CV) decimal	LTA Prob'y Basis decimal	Limiting LTA ug/L	Coeff. Var. (CV) decimal	AML Prob'y Basis decimal	MDL Prob'y Basis decimal	# of Samples per Month n
95.5	248.07	30.66	130.83	0.60	0.99	30.66	0.60	0.95	0.99	4.00
199.5	1336.50	64.04	704.84	0.60	0.99	64.04	0.60	0.95	0.99	4.00
39.4	349.98	12.64	184.57	0.60	0.99	12.64	0.60	0.95	0.99	4.00
243.2	109.77	78.06	57.89	0.60	0.99	57.89	0.60	0.95	0.99	4.00
25.9	1.46	8.33	0.77	0.60	0.99	0.77	0.60	0.95	0.99	4.00
3816.0	4908.87	1225.02	2588.84	0.60	0.99	1225.02	0.60	0.95	0.99	4.00
2.7	#####	0.86	#####	0.60	0.99	0.86	0.60	0.95	0.99	4.00
308.5	3247.09	99.04	1712.45	0.60	0.99	99.04	0.60	0.95	0.99	4.00

FACT SHEET FOR NPDES PERMIT NO. WA0024660  
MONTESANO WASTEWATER TREATMENT PLANT

**REASONABLE POTENTIAL CALCULATION**

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. To view notes (cells with red dots) highlight the cell and press shift F2. Corrected formulas in col G and H on 2/97(GB)

Parameter	Metal Criteria		Ambient Concentration (metals as dissolved)  ug/L	State Water Quality Standard		Max concentration at edge of...		LIMIT REQ'D?
	Translator as decimal	Translator as decimal		Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	
	Acute	Chronic						
ammonia (as N)			0.0400	9.132	2.081	5.03	0.47	NO
chlorine				19.0	11.0			NO
copper	0.996	0.996		3.735	2.869	3.728	0.322	NO
lead	0.466	0.466		10.792	0.421	0.69	0.06	NO
silver	0.850			0.217	#####	0.21	0.02	NO
zinc	0.996			29.27	26.73	12.02	1.04	NO

**CALCULATIONS**

Effluent percentile value		Max effluent conc. measured	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
	<i>P<sub>n</sub></i>	<i>ug/L</i>	<i>CV</i>	<i>s</i>	<i>n</i>			
0.95	0.992	80.00	0.60	0.55	372	0.66	10.50	121.5
0.95		0.0	0.60	0.55	720		10.50	121.5
0.95	0.473	15.2	0.60	0.55	4	2.59	10.50	121.5
0.95	0.473	6.00	0.60	0.55	4	2.59	10.50	121.5
0.95	0.473	1.00	0.60	0.55	4	2.59	10.50	121.5
0.95	0.473	49.00	0.60	0.55	4	2.59	10.50	121.5

**APPENDIX D – MAPS AND DRAWINGS**

# CITY OF MONTESANO

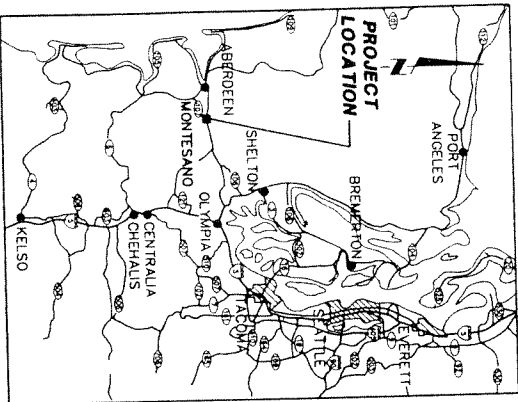
## WASTEWATER TREATMENT PLANT IMPROVEMENTS

### CITY OFFICIALS

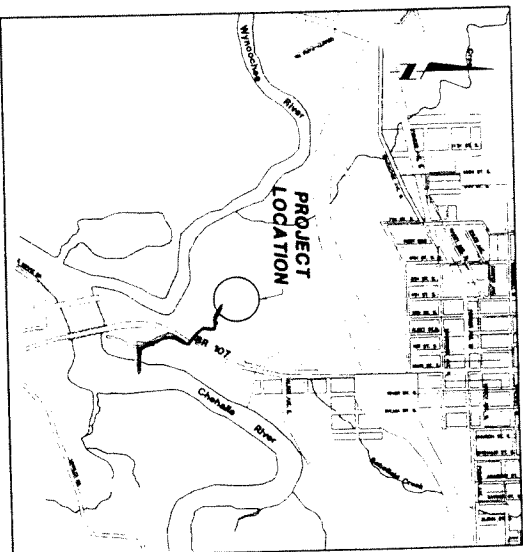
MAYOR ..... DOUG GEORGE  
 COUNCIL ..... RICHARD STONE  
 COUNCIL ..... JERRY CUTLER  
 COUNCIL ..... JERRY NODTENBOOM  
 COUNCIL ..... LARRY GRIGSBY  
 COUNCIL ..... LEFT WEEKS  
 COUNCIL ..... ANNA HANDEL  
 COUNCIL ..... DOUG IVERSON

### PROJECT OFFICIALS

DIRECTOR OF PUBLIC WORKS ..... CLINT DICE, P.E.  
 CLERK CONTROLLER ..... SHARON MORGAN



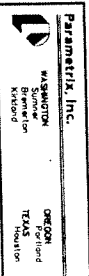
VICINITY MAP



LOCATION MAP

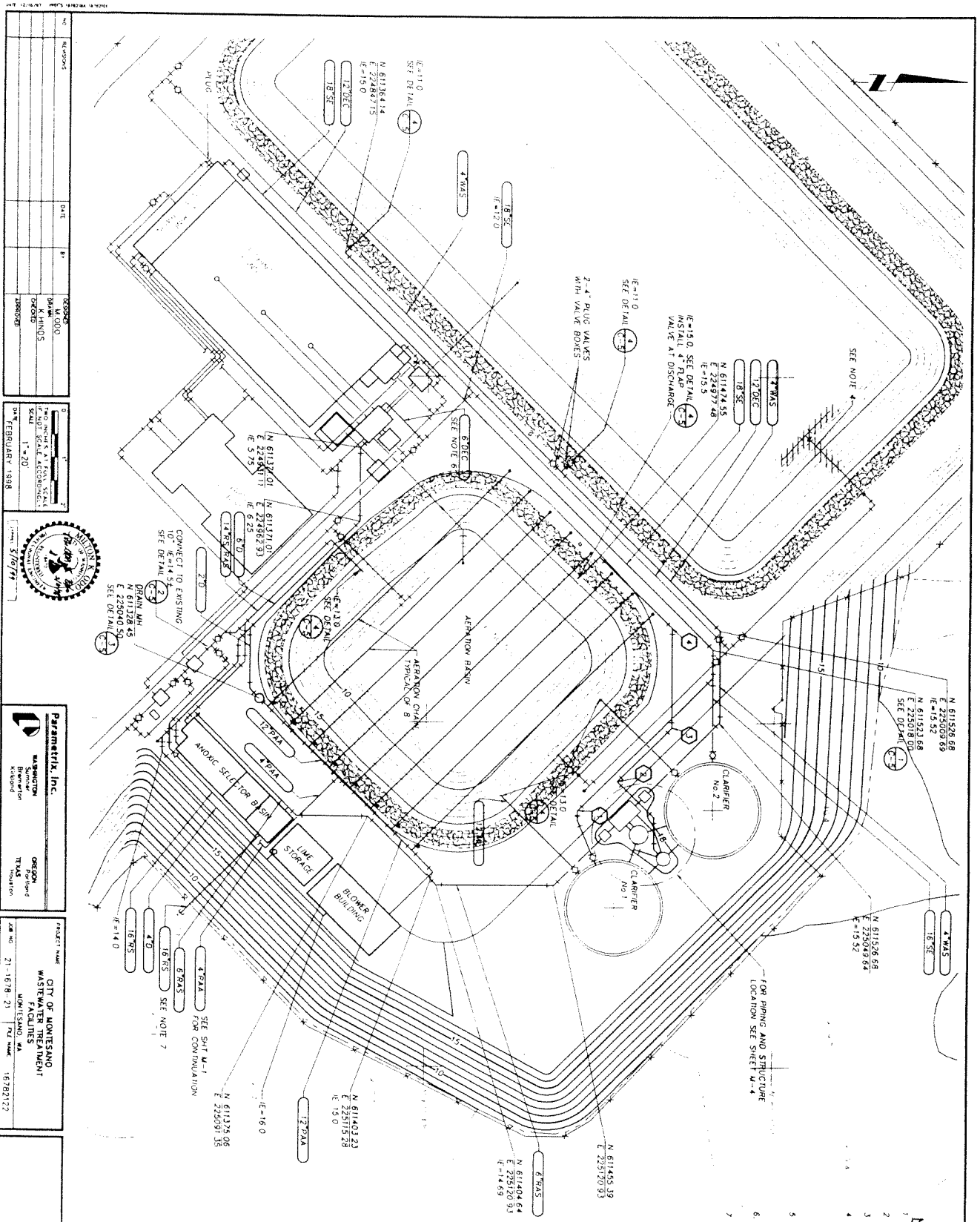
NO.	REVISIONS	DATE	BY	APPROVED
1	INITIAL DESIGN		BRADY	
2	REVISED		BRADY	
3	REVISED		BRADY	

SCALE	NONE
DATE	FEBRUARY 1998



PROJECT NAME	CITY OF MONTESANO WASTEWATER TREATMENT FACILITIES
PROJECT NO.	21-1678-21
DATE	16782117

COVER SHEET



NO.	DESCRIPTION	DATE	BY	CHECKED
1	DESIGN	1/10/00	M. D. D.	
2	REVISION	1/10/00	M. D. D.	
3	REVISION	1/10/00	M. D. D.	
4	REVISION	1/10/00	M. D. D.	
5	REVISION	1/10/00	M. D. D.	
6	REVISION	1/10/00	M. D. D.	
7	REVISION	1/10/00	M. D. D.	
8	REVISION	1/10/00	M. D. D.	
9	REVISION	1/10/00	M. D. D.	
10	REVISION	1/10/00	M. D. D.	

**NOTES:**

1. FOR PIPE TRENCH REQUIREMENTS, SEE DETAIL 1-1.
2. FOR BURIED VALVE REQUIREMENTS, SEE DETAIL 1-2.
3. FOR NEW PIPE LEGEND, SEE SHEET 0-1.
4. REMOVE EXISTING 12" HEADER AND SUPPORTS EXISTING 12" PIPE SHALL TERMINATE INTO THE LAOON AT E+14.0 PROVIDE PIPE PENETRATION PER DETAIL 1-3.
5. WHERE EXISTING HOPE LNER IS REMOVED FOR NEW PIPE PENETRATION, REPAIRS TO THE LNER SHALL BE PERFORMED PER SPEC SECTION 02212.
6. CONNECT TO EXISTING 10" DEC SEE DETAIL 1-4.
7. TERMINATE 12" DEC AT OUTSIDE FENCE LINE FOR FUTURE CONNECTION BY OTHERS. PROVIDE PIPE AT END OF PIPE AND STAKE TO IDENTIFY LOCATION. 16" RS SHALL BE INSTALLED WITH MINIMUM 3" OF COVER.

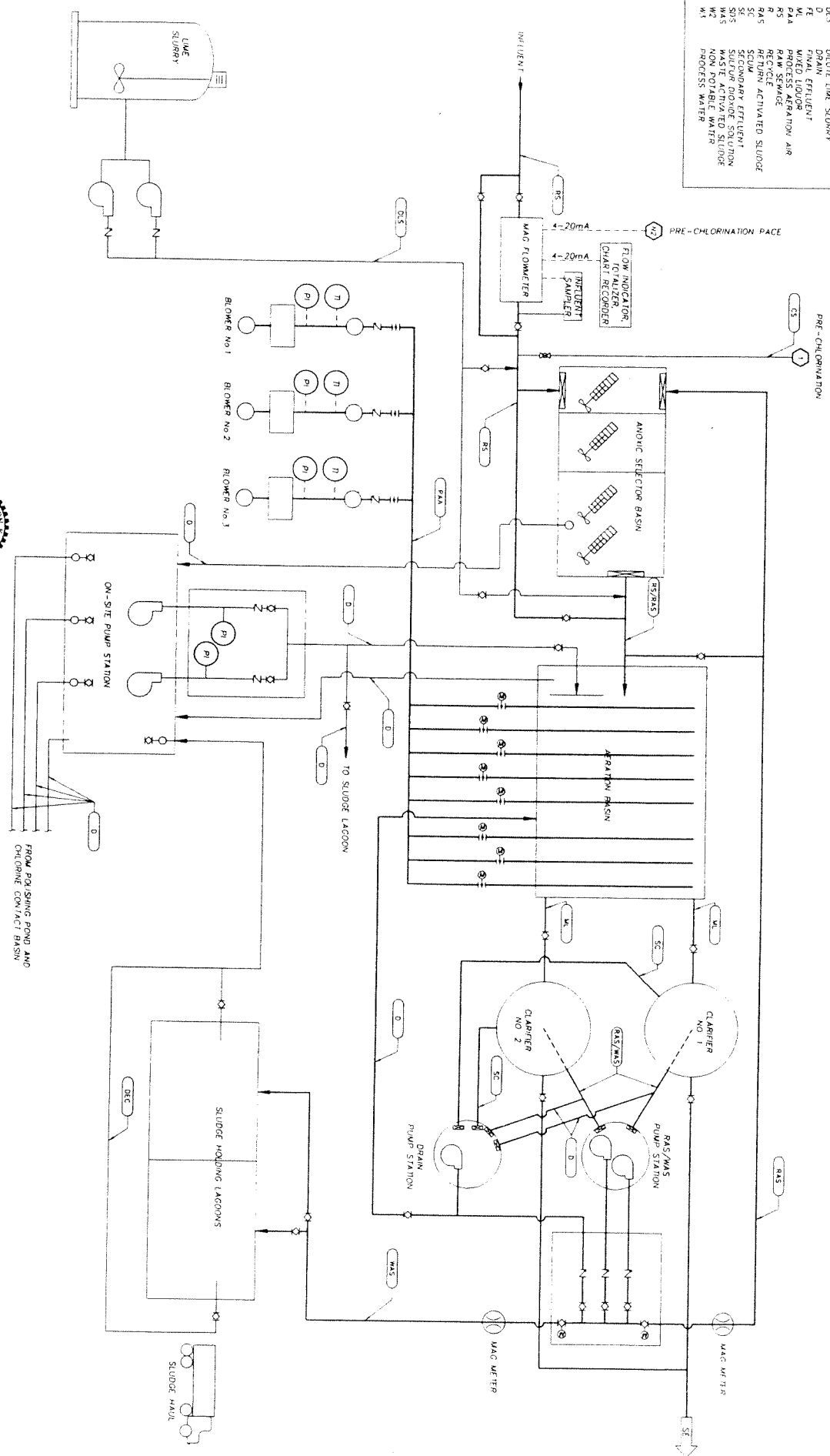
**PIPE FITTING COORDINATES:**

1	N 611453.61	16.56	45	AND 2219 BEAD
2	N 611482.58	47.0	90	BEAD
3	N 611482.58	47.0	90	BEAD
4	N 611482.58	47.0	90	BEAD
5	N 611482.58	47.0	90	BEAD
6	N 611482.58	47.0	90	BEAD
7	N 611482.58	47.0	90	BEAD
8	N 611482.58	47.0	90	BEAD
9	N 611482.58	47.0	90	BEAD
10	N 611482.58	47.0	90	BEAD





LEGEND	
BP	BRASS
CS	CHLORINE SOLUTION
DEC	DECANT
DL	DILUTE LIME SLURRY
D	DRAIN
DE	DEWATER
MA	MANUAL
PA	PROCESS AIR
PA	PROCESS AIR
RS	RAW SEWAGE
R	RECYCLE
RS	RETURN ACTIVATED SLUDGE
SE	SECONDARY EFFLUENT
SE	SULFUR DIOXIDE SOLUTION
MS	WASTE ACTIVATED SLUDGE
MS	WASTE ACTIVATED SLUDGE
MS	PROCESS WATER



NO.	REVISION	DATE	BY	REASON
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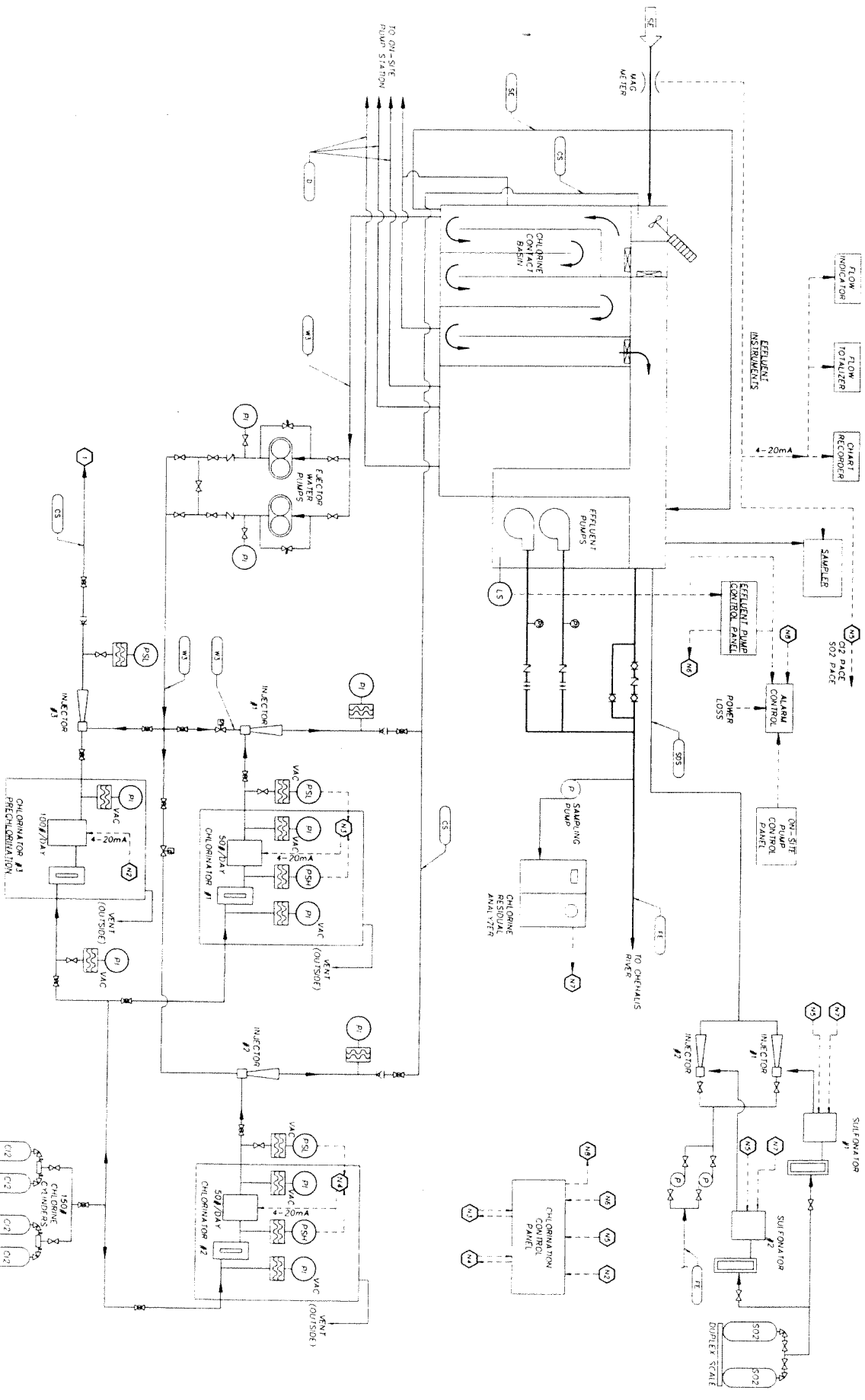
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PROJECT NO. 1678-21 CITY OF MONTESANO WASTEWATER TREATMENT FACILITY MONTESANO, WA		DATE: FEBRUARY 1998 DRAWN BY: J. J. JENSEN CHECKED BY: J. J. JENSEN APPROVED BY: J. J. JENSEN
PRODUCT NAME: WASTEWATER TREATMENT FACILITY PROJECT NO. 1678-21 CITY OF MONTESANO WASTEWATER TREATMENT FACILITY MONTESANO, WA		SCALE: 1" = 10'-0" SHEET NO. 5 TOTAL SHEETS: 5

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 Portland, OR 97217  
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 Fax: (503) 253-1101  
 Email: info@parameterix.com

PROCESS AND INSTRUMENTATION  
 DIAGRAM